

Closure of Context Free

Theorem: The context-free languages are closed under the three Kleene operations.

That is:

If A, B context-free
then so is $A \cup B, AB, A^*$

PROOF:

Convert the CFGs

Say $S_A \rightarrow$ produces A

and $S_B \rightarrow$ produces B .

$S \rightarrow S_A | S_B$ produces $A \cup B$

$S \rightarrow S_A S_B$ " AB

$S \rightarrow S S_A | \epsilon$ " A^*

Note that context-free languages NOT closed under complementation.

(Example Later)

Languages accepted by Deterministic PDAs are closed under complementation.

Binary palindromes needs the nondeterminism.